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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,288	09/18/2006	Munetaka Watanabe	Q81522	8457

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
JAHAN, BILKIS	

ART UNIT	PAPER NUMBER
2814	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,288	WATANABE ET AL.	
	Examiner	Art Unit	
	BILKIS JAHAN	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/18/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (US 6,958,494 B2) in view of Sakamoto et al (US 2004/0124422 A1).

Regarding claim 1, Lin et al disclose a transparent positive electrode 317 (Fig. 8, column 3, line 43) for gallium nitride-based compound semiconductor light-emitting devices (abstract, lines 1-3), comprising:

- a contact metal layer 316 (Fig. 8, column 5, lines 35-37) in contact with a p-type semiconductor layer 315 (Fig. 8, column 5, line 30), a bonding pad layer 321 (Fig. 8, column 5, line 43).
- Lin et al do not disclose a current diffusing layer and a bonding pad layer on a current diffusing layer. However, Lin et al disclose a current diffusing layer 216 (Fig. 4, col. 4, lines 41-42) and a bonding pad layer 221 (Fig. 4, col. 5, line 6) on a current diffusing layer 216 (Fig. 4, col. 4, lines 41-42) in another embodiment. Lin et al teaches current diffusing layer is used to light emitted by the active layer (col. 2, lines 56-58) and high brightness LEDs with large power output (col. 1, lines 30-33). It would have obvious

to have a current diffusing layer in the GaN based light-emitting devices in order to light emitted by the active layer (col. 2, lines 56-58) and high brightness LEDs with large power output (col. 1, lines 30-33).

- Lin et al do not disclose a current diffusing layer on the contact metal layer. However, Lin et al disclose the contact metal layer 217 (Fig. 4, col. 3, lines 60-61) is on a current diffusing layer 216 (Fig. 4, col. 4, lines 41-42) in another embodiment (Fig. 4). However, the rearrangement of parts was held to have been obvious for a person having ordinary skill in the art. *In re japikse* 86 USPQ 70 (CCPA 1950) (see MPEP chapter 2100, section 2144.04, and page 136).
- Lin et al also do not disclose the current diffusing layer having an electrical conductivity larger than that of the contact metal layer. However, Sakamoto discloses the current diffusing layer having an electrical conductivity larger than that of the contact metal layer (Sakamoto, Para. 94, lines 21-26). Sakamoto et al teach of using different conductivity of the current diffusing layer and the contact metal layer for light emission more uniform without too high a concentration current and to improve efficiency of light outgoing (Para. 26). It would have been obvious to one having ordinary skill of art at the time of invention to replace Lin's structure material with Sakamoto's structure material including different conductivity of the current diffusing layer and the contact metal layer for

light emission more uniform without too high a concentration current and to improve efficiency of light outgoing (Para. 26).

Claims 2-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (US 6,958,494 B2), Sakamoto et al (US 2004/0124422 A1) and further in view of Uemura et al (US 2002/0072204 A1).

Regarding claims 2, 3, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the contact metal layer is a platinum group metal or an alloy containing a platinum group metal and the contact metal layer is platinum.

- However, Uemura et al disclose the contact metal layer (Para. 91, lines 4-7) is a platinum group metal or an alloy containing a platinum group metal and the contact metal layer is platinum (Para. 91, lines 4-7). Uemura et al teach of using platinum as a metal to decrease the driving voltage (Para. 91, lines 4-7). It would have been obvious to one having ordinary skill of art at the time of invention to replace Lee's structure material with Uemura's structure material to decrease the driving voltage (Para. 91, lines 4-7).

Regarding claim 4, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode according to any one of claims 1 to 3, wherein the thickness of the contact metal layer is from 0.1 to 7.5 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the

prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 5, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode, wherein the thickness of the contact metal layer is from 0.1 to 5 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 6, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode, wherein the thickness of the contact metal layer is from 0.5 to 2.5 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 7, 8, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the current diffusing layer is a metal selected from the group consisting

of gold, silver and copper, or an alloy containing at least one member of gold, silver and copper and the current diffusing layer is gold.

- However, Sakamoto et al disclose the current diffusing layer is a metal selected from the group consisting of gold (Sakamoto, Para. 94, lines 21-26), silver and copper, or an alloy containing at least one member of gold, silver and copper and the current diffusing layer is gold (Sakamoto, Para. 94, lines 21-26). Sakamoto et al teach of using gold as a current diffusing layer for light emission more uniform without too high a concentration current and to improve efficiency of light outgoing (Para. 26). It would have been obvious to one having ordinary skill of art at the time of invention to replace Lin's structure material with Sakamoto's structure material for light emission more uniform without too high a concentration current and to improve efficiency of light outgoing (Para. 26).

Regarding claim 9, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode, wherein the thickness of the current diffusing layer is from 1 to 20 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 10, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode, wherein the thickness of the current diffusing layer is from 1 to I0 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 11, Lin et al in view of Sakamoto et al disclose limitations in claim 1 but does not disclose the transparent positive electrode, wherein the thickness of the current diffusing layer is from 3 to 6 nm. However, it would have been obvious to one of ordinary skill in the art to **use any suitable thickness for the device**, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Alner, 220 F .2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 12, Lin et al further disclose a gallium nitride-based compound semiconductor light-emitting device comprising the transparent positive electrode 317 (Fig. 8, column 5, lines 37, 40) according to any one of claim 1 to 11.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BILKIS JAHAN whose telephone number is (571)270-5022. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571)-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wai-Sing Louie/
Primary Examiner, Art Unit 2814

BJ